

Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State  
Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: HALO COMMERCIAL

Report Number: P345411

Luminaire Tested: **PR4FS12D010 PR4M12WW9FSMW 2000Lm4000K**

Issue Date: 03/03/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P345411  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1908-453-7)  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 03/03/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO COMMERCIAL  
Catalog Number: PR4FS12D010 PR4M12WW9FSMW 2000Lm4000K  
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE WHITE FINISH  
Light Source: ARRAY OF HIGH LUMEN LEDs 90CRI / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1506.0 lumens  
Efficiency: N/A  
Efficacy: 72.8 lumens/watt  
Spacing Criteria (0/90/45): 0.95 / 1.12 / 1.11  
Luminous Opening: Circular (Dia: 0.4' x H: 0')  
CIE Type: Direct

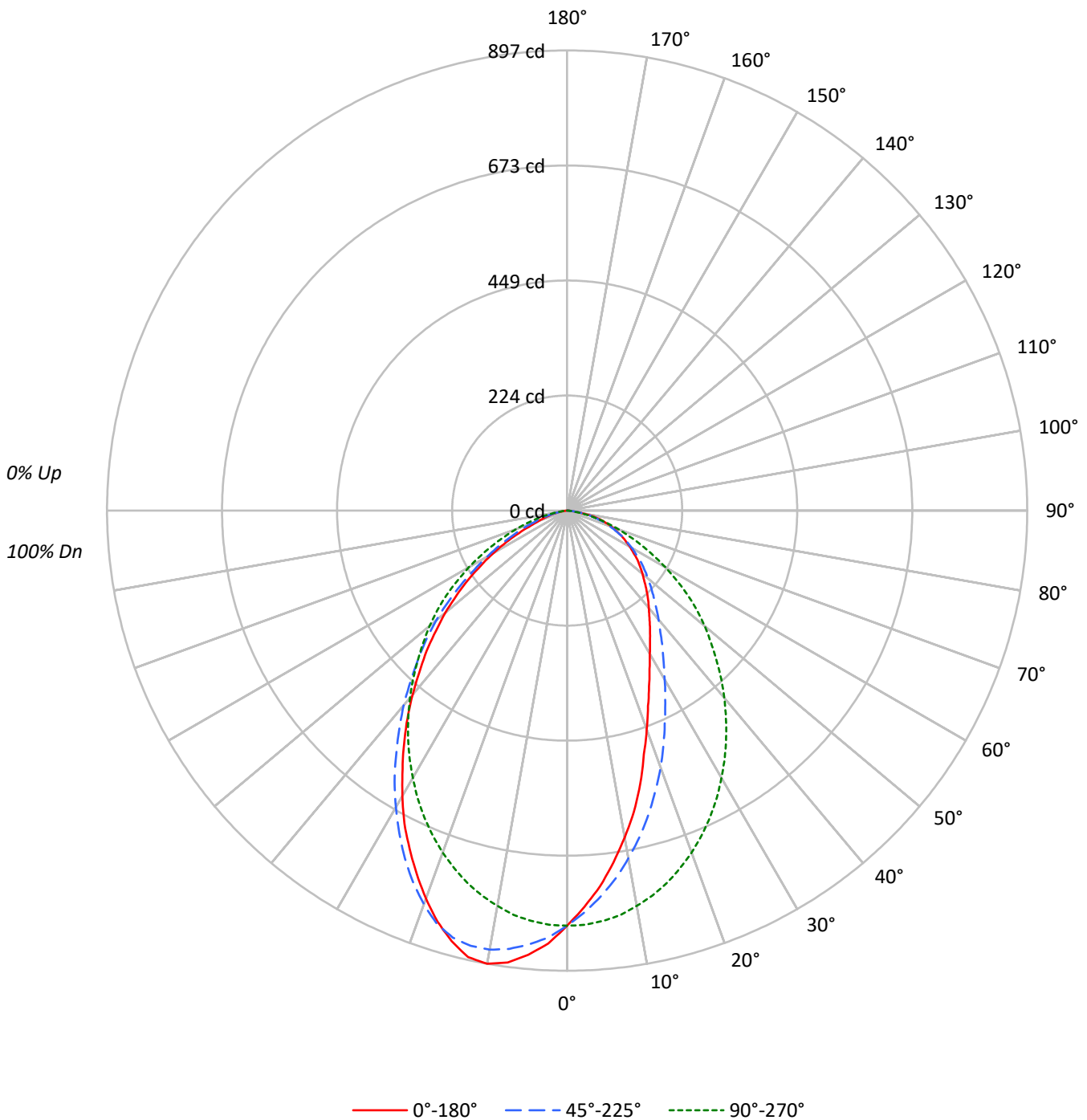
Input Watts (W): 20.7  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20					20					20					20					20					
RC	80					70					50					30					10					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100					100			
1	111	106	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89					87				
2	102	95	89	84	99	93	87	83	89	85	81	86	82	79	83	80	77					75				
3	94	85	77	72	92	83	76	71	80	75	70	78	73	69	75	71	68					66				
4	87	76	68	62	85	75	67	62	72	66	61	70	65	60	68	63	59					57				
5	80	69	61	55	78	68	60	54	66	59	54	64	58	53	62	57	53					51				
6	75	63	54	49	73	62	54	48	60	53	48	58	52	48	57	51	47					45				
7	70	57	49	44	68	57	49	43	55	48	43	54	47	43	52	47	43					41				
8	65	53	45	39	64	52	45	39	51	44	39	50	43	39	48	43	39					37				
9	61	49	41	36	60	48	41	36	47	40	36	46	40	35	45	39	35					34				
10	58	45	38	33	56	45	38	33	44	37	33	43	37	33	42	36	32					31				

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	70780	70780	70780
5°	64562	70489	76310
10°	57421	69492	79670
15°	49914	68043	78701
20°	42241	66052	74923
25°	36462	63630	70145
30°	32543	60752	64863
35°	30059	57715	59199
40°	28238	54385	53529
45°	27016	50841	47934
50°	26073	47627	42239
55°	25467	43752	36066
60°	24719	38766	29215
65°	24153	33012	21484
70°	23554	27109	14782
75°	22440	20615	11220
80°	15615	11837	6448
85°	6423	4315	2108



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	75.8	5.0
10°-20°	205.5	13.6
20°-30°	277.7	18.4
30°-40°	292.3	19.4
40°-50°	263.3	17.5
50°-60°	203.3	13.5
60°-70°	125.2	8.3
70°-80°	55.0	3.7
80°-90°	7.9	0.5
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	559.0	37.1
0°-40°	851.3	56.5
0°-60°	1318.0	87.5
0°-90°	1506.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1506.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	809	809	809	809	809	
5°	735	755	803	849	869	67
15°	551	613	751	862	869	153
25°	378	451	659	748	727	175
35°	282	323	540	581	554	177
45°	218	239	411	411	388	169
55°	167	176	287	254	236	149
65°	117	117	160	121	104	115
75°	66	59	61	40	33	68
85°	6	5	4	3	2	11
90°	0	0	0	0	0	



TEST NUMBER: P345411

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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	809.2	809.2	809.2	809.2	809.2	809.2	809.2	809.2	809.2	809.2	809.2
2.5°	772.8	773.9	773.9	773.9	774.9	776.0	776.0	778.1	779.2	781.4	783.5
5°	735.3	734.3	734.3	736.4	738.5	739.6	739.6	743.9	747.1	750.3	754.6
7.5°	691.4	690.4	693.6	694.7	696.8	700.0	702.2	706.4	709.6	717.1	723.6
10°	646.5	646.5	648.6	651.8	655.1	658.3	660.4	665.8	672.2	679.7	688.2
12.5°	601.5	598.3	601.5	605.8	609.0	612.2	615.5	621.9	631.5	641.1	651.8
15°	551.2	550.2	552.3	556.6	564.1	566.2	569.4	579.1	588.7	601.5	613.3
17.5°	497.7	500.9	502.0	508.4	515.9	519.1	522.3	532.0	545.9	558.7	572.6
20°	453.8	451.7	456.0	460.3	466.7	472.0	476.3	487.0	502.0	515.9	533.0
22.5°	412.1	411.0	414.2	419.6	424.9	429.2	433.5	444.2	456.0	472.0	491.3
25°	377.8	376.8	380.0	383.2	389.6	392.8	396.0	406.7	419.6	432.4	450.6
27.5°	347.9	347.9	350.0	352.1	357.5	360.7	365.0	373.6	384.3	397.1	414.2
30°	322.2	322.2	324.3	326.5	331.8	334.0	337.2	343.6	352.1	366.1	380.0
32.5°	300.8	300.8	301.8	305.1	307.2	309.3	312.5	317.9	326.5	337.2	350.0
35°	281.5	281.5	282.6	284.7	287.9	289.0	291.1	296.5	302.9	311.5	323.2
37.5°	263.3	264.4	264.4	266.5	268.7	269.7	271.9	276.2	281.5	289.0	298.6
40°	247.3	248.3	248.3	250.5	252.6	253.7	254.7	256.9	263.3	268.7	277.2
42.5°	233.3	233.3	233.3	234.4	236.5	237.6	238.7	241.9	245.1	250.5	256.9
45°	218.4	218.4	219.4	220.5	222.6	222.6	223.7	226.9	229.1	233.3	238.7
47.5°	204.4	204.4	205.5	205.5	207.6	207.6	208.7	210.9	213.0	217.3	221.6
50°	191.6	191.6	191.6	192.7	193.7	194.8	194.8	196.9	199.1	202.3	205.5
52.5°	178.7	178.7	178.7	178.7	179.8	180.9	180.9	183.0	185.2	187.3	190.5
55°	167.0	165.9	167.0	167.0	167.0	168.0	168.0	170.2	170.2	172.3	175.5
57.5°	153.1	154.1	154.1	153.1	154.1	155.2	155.2	155.2	156.3	158.4	159.5
60°	141.3	141.3	141.3	141.3	142.4	142.4	142.4	142.4	143.4	143.4	145.6
62.5°	128.4	128.4	129.5	129.5	128.4	129.5	129.5	129.5	130.6	130.6	130.6
65°	116.7	116.7	116.7	116.7	116.7	116.7	116.7	116.7	116.7	116.7	116.7
67.5°	103.8	103.8	103.8	103.8	103.8	103.8	103.8	102.8	102.8	102.8	101.7
70°	92.1	92.1	92.1	91.0	91.0	91.0	91.0	89.9	89.9	88.8	87.8
72.5°	79.2	79.2	79.2	78.1	78.1	78.1	77.1	76.0	74.9	73.9	73.9
75°	66.4	66.4	65.3	64.2	64.2	63.2	63.2	62.1	62.1	59.9	58.9
77.5°	51.4	50.3	50.3	50.3	49.2	48.2	48.2	47.1	46.0	46.0	45.0
80°	31.0	31.0	32.1	31.0	32.1	31.0	31.0	32.1	31.0	30.0	30.0
82.5°	15.0	15.0	16.1	15.0	16.1	16.1	16.1	15.0	15.0	15.0	15.0
85°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	5.4	5.4	5.4
87.5°	4.3	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	809.2	809.2	809.2	809.2	809.2	809.2	809.2	809.2	809.2	809.2	809.2
2.5°	785.6	788.9	789.9	793.1	794.2	796.3	798.5	801.7	804.9	808.1	810.3
5°	758.9	764.2	768.5	773.9	777.1	779.2	785.6	791.0	797.4	802.8	808.1
7.5°	730.0	736.4	746.0	752.5	755.7	761.0	768.5	777.1	785.6	795.3	802.8
10°	696.8	706.4	716.1	727.8	733.2	738.5	748.2	760.0	771.7	782.4	794.2
12.5°	661.5	674.3	687.2	698.9	706.4	712.9	727.8	740.7	754.6	768.5	781.4
15°	627.2	641.1	656.1	671.1	679.7	687.2	702.2	718.2	735.3	751.4	766.4
17.5°	589.8	605.8	622.9	640.1	648.6	658.3	677.5	694.7	713.9	731.1	749.2
20°	551.2	569.4	587.6	609.0	617.6	628.3	647.6	669.0	689.3	709.6	728.9
22.5°	511.6	532.0	552.3	574.8	586.6	597.3	619.7	641.1	663.6	685.0	706.4
25°	471.0	494.5	518.1	540.5	553.4	564.1	588.7	613.3	636.9	659.3	681.8
27.5°	433.5	456.0	481.7	506.3	519.1	530.9	557.7	581.2	606.9	631.5	654.0
30°	399.2	420.6	446.3	473.1	485.9	498.8	525.5	552.3	575.9	601.5	626.2
32.5°	367.1	386.4	412.1	438.8	453.8	465.6	493.4	519.1	545.9	571.6	596.2
35°	337.2	356.4	378.9	405.7	418.5	432.4	461.3	488.1	513.8	540.5	563.0
37.5°	311.5	326.5	346.8	372.5	386.4	400.3	429.2	456.0	481.7	508.4	532.0
40°	286.9	300.8	319.0	341.4	355.4	369.3	397.1	423.9	449.5	476.3	500.9
42.5°	266.5	277.2	292.2	313.6	325.4	339.3	367.1	392.8	418.5	444.2	467.7
45°	246.2	255.8	268.7	285.8	297.6	310.4	337.2	363.9	387.5	411.0	434.6
47.5°	226.9	234.4	246.2	261.2	270.8	282.6	308.3	334.0	357.5	380.0	401.4
50°	209.8	216.2	226.9	237.6	246.2	256.9	279.4	305.1	327.5	350.0	369.3
52.5°	193.7	199.1	206.6	217.3	223.7	232.3	253.7	276.2	298.6	319.0	337.2
55°	178.7	182.0	188.4	195.9	201.2	208.7	226.9	248.3	268.7	286.9	301.8
57.5°	161.6	165.9	170.2	175.5	180.9	185.2	199.1	218.4	236.5	252.6	267.6
60°	146.6	149.8	152.0	157.3	159.5	163.8	174.5	190.5	207.6	221.6	232.3
62.5°	131.7	132.7	134.9	139.1	140.2	143.4	150.9	163.8	176.6	189.5	200.2
65°	116.7	116.7	118.8	119.9	122.0	123.1	128.4	138.1	149.8	159.5	165.9
67.5°	101.7	101.7	102.8	102.8	104.9	104.9	108.1	115.6	123.1	131.7	137.0
70°	86.7	86.7	86.7	86.7	86.7	87.8	89.9	94.2	99.5	106.0	109.2
72.5°	72.8	71.7	71.7	70.6	70.6	70.6	71.7	73.9	78.1	82.4	85.6
75°	57.8	56.7	55.7	55.7	54.6	54.6	54.6	56.7	58.9	61.0	62.1
77.5°	42.8	42.8	41.7	39.6	39.6	38.5	38.5	38.5	39.6	41.7	40.7
80°	30.0	27.8	26.8	26.8	25.7	25.7	24.6	23.5	23.5	23.5	22.5
82.5°	13.9	13.9	13.9	12.8	12.8	12.8	12.8	11.8	11.8	10.7	10.7
85°	5.4	5.4	5.4	5.4	5.4	5.4	5.4	4.3	4.3	4.3	4.3
87.5°	3.2	3.2	3.2	3.2	3.2	2.1	2.1	2.1	2.1	2.1	2.1
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	809.2	809.2	809.2	809.2	809.2	809.2	809.2	809.2	809.2	809.2	809.2
2.5°	813.5	816.7	819.9	821.0	822.0	825.2	827.4	830.6	832.7	833.8	835.9
5°	814.5	819.9	825.2	828.5	830.6	835.9	840.2	845.6	848.8	854.1	857.4
7.5°	811.3	819.9	827.4	831.7	835.9	843.4	849.9	856.3	861.6	867.0	872.3
10°	804.9	815.6	826.3	830.6	835.9	844.5	854.1	861.6	869.1	875.5	882.0
12.5°	795.3	808.1	821.0	826.3	831.7	843.4	853.1	861.6	869.1	875.5	879.8
15°	782.4	797.4	811.3	818.8	825.2	837.0	846.6	855.2	861.6	865.9	869.1
17.5°	766.4	783.5	799.6	806.0	813.5	824.2	833.8	840.2	844.5	844.5	845.6
20°	748.2	766.4	782.4	789.9	797.4	806.0	813.5	816.7	816.7	816.7	814.5
22.5°	726.8	746.0	762.1	769.6	776.0	782.4	786.7	786.7	784.6	781.4	778.1
25°	702.2	722.5	737.5	745.0	748.2	753.5	752.5	751.4	748.2	745.0	740.7
27.5°	675.4	695.7	711.8	715.0	717.1	718.2	715.0	712.9	708.6	704.3	701.1
30°	647.6	666.8	679.7	680.7	682.9	681.8	677.5	672.2	667.9	662.5	658.3
32.5°	617.6	635.8	644.4	646.5	645.4	641.1	636.9	631.5	626.2	619.7	614.4
35°	585.5	602.6	608.0	606.9	605.8	600.5	594.0	588.7	581.2	576.9	569.4
37.5°	552.3	568.4	570.5	567.3	564.1	557.7	551.2	545.9	537.3	533.0	527.7
40°	519.1	529.8	529.8	526.6	524.5	518.1	509.5	502.0	495.6	488.1	484.9
42.5°	484.9	493.4	489.2	487.0	483.8	474.2	467.7	460.3	451.7	447.4	442.1
45°	450.6	456.0	450.6	446.3	443.1	434.6	428.1	418.5	411.0	406.7	400.3
47.5°	415.3	417.4	413.2	406.7	404.6	395.0	387.5	380.0	372.5	365.0	359.6
50°	383.2	381.0	374.6	370.3	367.1	356.4	347.9	339.3	332.9	326.5	321.1
52.5°	346.8	344.7	336.1	330.7	325.4	316.8	306.1	299.7	292.2	286.9	281.5
55°	309.3	302.9	296.5	291.1	285.8	277.2	267.6	259.0	253.7	247.3	244.0
57.5°	270.8	266.5	255.8	251.5	247.3	238.7	229.1	221.6	214.1	209.8	207.6
60°	236.5	229.1	220.5	215.1	210.9	202.3	193.7	186.2	180.9	178.7	175.5
62.5°	200.2	193.7	184.1	179.8	176.6	168.0	160.6	154.1	149.8	145.6	143.4
65°	167.0	159.5	152.0	147.7	143.4	135.9	130.6	126.3	120.9	117.7	115.6
67.5°	134.9	128.4	122.0	118.8	115.6	109.2	103.8	100.6	96.3	93.1	88.8
70°	106.0	100.6	96.3	93.1	89.9	84.6	80.3	77.1	73.9	70.6	67.4
72.5°	82.4	77.1	71.7	70.6	68.5	64.2	61.0	57.8	54.6	52.4	50.3
75°	58.9	56.7	52.4	50.3	49.2	46.0	42.8	40.7	39.6	37.5	36.4
77.5°	38.5	36.4	33.2	33.2	32.1	31.0	28.9	26.8	26.8	25.7	25.7
80°	21.4	20.3	19.3	18.2	19.3	18.2	17.1	16.1	16.1	16.1	15.0
82.5°	9.6	9.6	8.6	8.6	8.6	8.6	8.6	7.5	7.5	7.5	7.5
85°	4.3	4.3	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
87.5°	2.1	2.1	2.1	2.1	2.1	2.1	1.1	1.1	1.1	1.1	1.1
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0





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CATALOG NUMBER: PR4FS12D010 PR4M12WW9FSMW 2000Lm4000K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	809.2	809.2	809.2	809.2	809.2	809.2	809.2	809.2
2.5°	838.1	839.2	840.2	841.3	842.4	842.4	843.4	844.5
5°	859.5	862.7	863.8	864.8	867.0	868.1	868.1	869.1
7.5°	876.6	880.9	882.0	884.1	886.3	887.3	888.4	888.4
10°	886.3	889.5	890.5	892.7	894.8	895.9	897.0	897.0
12.5°	883.0	886.3	887.3	888.4	890.5	891.6	891.6	891.6
15°	871.3	871.3	871.3	871.3	870.2	871.3	871.3	869.1
17.5°	844.5	843.4	844.5	842.4	841.3	841.3	840.2	840.2
20°	812.4	811.3	810.3	810.3	809.2	807.0	806.0	804.9
22.5°	776.0	773.9	772.8	772.8	770.7	769.6	768.5	766.4
25°	738.5	733.2	733.2	733.2	731.1	731.1	728.9	726.8
27.5°	695.7	692.5	692.5	690.4	688.2	687.2	686.1	687.2
30°	655.1	650.8	648.6	647.6	646.5	646.5	643.3	642.2
32.5°	610.1	606.9	604.7	603.7	601.5	600.5	599.4	597.3
35°	566.2	563.0	560.9	560.9	556.6	555.5	554.4	554.4
37.5°	521.3	519.1	518.1	514.8	513.8	512.7	512.7	511.6
40°	479.5	476.3	475.2	472.0	471.0	471.0	467.7	468.8
42.5°	436.7	432.4	431.4	430.3	429.2	427.1	428.1	426.0
45°	396.0	392.8	390.7	390.7	389.6	387.5	386.4	387.5
47.5°	356.4	352.1	352.1	351.1	350.0	348.9	348.9	346.8
50°	319.0	315.8	313.6	311.5	312.5	311.5	309.3	310.4
52.5°	278.3	275.1	274.0	274.0	272.9	272.9	271.9	271.9
55°	241.9	238.7	238.7	237.6	237.6	237.6	236.5	236.5
57.5°	205.5	203.4	202.3	202.3	200.2	201.2	200.2	199.1
60°	173.4	170.2	168.0	169.1	168.0	168.0	165.9	167.0
62.5°	140.2	138.1	137.0	137.0	134.9	134.9	132.7	133.8
65°	112.4	109.2	108.1	107.0	104.9	103.8	103.8	103.8
67.5°	86.7	84.6	83.5	81.3	79.2	78.1	77.1	76.0
70°	65.3	63.2	62.1	61.0	59.9	58.9	58.9	57.8
72.5°	49.2	47.1	47.1	46.0	46.0	45.0	45.0	45.0
75°	35.3	35.3	34.3	34.3	33.2	34.3	33.2	33.2
77.5°	24.6	23.5	24.6	23.5	22.5	22.5	22.5	22.5
80°	13.9	13.9	13.9	13.9	13.9	13.9	13.9	12.8
82.5°	7.5	7.5	7.5	6.4	6.4	6.4	6.4	6.4
85°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
87.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)